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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/736,255	12/15/2003	Alexander Kosyachkov	SMBZ 2 01015	6424

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FAY, SHARPE, FAGAN, MINNICH & MCKEE, LLP  
1100 SUPERIOR AVENUE, SEVENTH FLOOR  
CLEVELAND, OH 44114

EXAMINER
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MCDONALD, RODNEY GLENN

ART UNIT	PAPER NUMBER
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1753

DATE MAILED: 12/08/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/736,255

Applicant(s)

KOSYACHKOV, ALEXANDER

Examiner

Rodney G. McDonald

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-62 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-30,32-34,41 and 43-62 is/are rejected.
- 7) ☒ Claim(s) 31,35-40 and 42 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- |  |  |
|--|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>4/2004, 12/2004</u> . | 6) <input type="checkbox"/> Other: ____  |

## **DETAILED ACTION**

### ***Claim Objections***

Claim 47 is objected to because of the following informalities:

Claim 47 is misnumbered as claim 4478. It should be renumbered as claim 47.

Appropriate correction is required.

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-27, 32-34, 43-55, 56-62 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 1, 43, 56 are indefinite because "low" lacks basis for comparison.

Claim 6 is indefinite because it depends upon itself.

Claim 32 is indefinite because it depends upon itself.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 28-30 are rejected under 35 U.S.C. 102(b) as being anticipated by Kato et al. (Japan 06-163157)

Regarding claim 28, Kato et al. teach a composite sputter target for use in deposition methods to form a multi-element phosphor composition. The composite sputtering comprises a mosaic of ZnS and Mn. Here the matrix phase is represented by the metal Mn. The inclusion phase is represented by a chemical compound of ZnS. (See Abstract) One of the phases comprises the one metallic material of Mn. The other phase is ZnS which comprising the remaining non metallic materials that contribute to the phosphor composition. (See Abstract)

Regarding claim 29, The matrix phase comprises a metallic matrix of one metallic material Mn. The inclusion phase comprises one non metallic material that are chemical compounds that contribute the remaining elements of the phosphor composition. i.e. ZnS. (See Abstract)

Regarding claim 30, the metal matrix is selected from the group consisting of the metal Mn. (See Abstract)

Claims 28-30 are rejected under 35 U.S.C. 102(b) as being anticipated by Hanak (U.S. Pat. 3,803,438).

Regarding claim 28, Hanak teach a composite sputter target for use in deposition methods to form a multi-element phosphor composition. The composite sputtering comprises a ZnS, Mn and Cu. Here the matrix phase is represented by the metal Mn or Cu. The inclusion phase is represented by a chemical compound of ZnS. (Column 3 lines 7-15) One of the phases comprises the one metallic material of Mn or Cu. The other phase is ZnS which comprising the remaining non metallic materials that contribute to the phosphor composition. (Column 3 lines 7-15)

Regarding claim 29, The matrix phase comprises a metallic matrix of one metallic material Mn. The inclusion phase comprises one non metallic material that are chemical compounds that contribute the remaining elements of the phosphor composition. i.e. ZnS. (Column 3 lines 7-15)

Regarding claim 30, the metal matrix is selected from the group consisting of the metal Mn. (Column 3 lines 7-15)

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 41 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kato et al. (Japan 06-163157) in view of Katou et al. (U.S. Pat. 5,518,432).

Kato et al. is discussed above and all as applies above. (See Kato et al. discussed above)

The differences is the inclusion phase being provided as discrete metallic bodies selected from pellets and spheres in the non-metallic matrix phase (Claim 41)

Katou et al. suggest that a mosaic target can be formed by embedding pellets in the surface of a target. (Column 4 lines 15-20)

The motivation for utilizing the features of Katou et al. is that it allows for controlling the composition of the deposited film. (Column 4 lines 10-27)

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Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified Kato et al. by utilizing the features of Katou et al. because it allows for controlling the composition of the deposited film.

***Allowable Subject Matter***

Claims 1-27, 32-34, 43-62 would be allowable if rewritten or amended to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action.

Claims 31, 35-40 and 42 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:

Claims 1-5 and 8-27 are indicated as being allowable over the prior art of record because the prior art of record does not teach the claimed subject matter including varying the pressure of the reactive species within the sputtering atmosphere to control the sputtering rate of the two component phases of the composite target to cause the ratio of the elements in the two component phases to deposit in a desired ratio as a phosphor film on the substrate.

Claims 31 are indicated as being allowable over the prior art of record because the prior art of record does not teach the claimed composite target including utilizing aluminum, gallium, and indium in the target for forming phosphor compositions.

Claims 35-39 are indicated as being allowable over the prior art of record because the prior art of record does not teach the claimed composite target including a matrix phase provided as a metallic disc having an engraved surface of grooves containing the inclusion phase.

Claim 40 is indicated as being allowable over the prior art of record because the prior art of record does not teach the claimed composite target including the inclusion phase provide as a porous plaque with pores filled with the metallic matrix phase.

Claim 42 is indicated as being allowable over the prior art of record because the prior art of record does not teach the claimed composite target including a metallic matrix phase and a non metallic matrix phase, the phases interpenetrating with each other.

Claims 43-55 are indicated as being allowable over the prior art of record because the prior art of record does not teach the claimed subject matter including applying sufficient power to the composite target and varying the pressure of the reactive species within the sputtering atmosphere to control the sputtering rate of the matrix and inclusion phases of the composite target to cause the ratio of the elements in the two component phases to deposit in a desired ratio as a phosphor on the substrate.

Claims 56-62 are indicated as being allowable over the prior art of record because the prior art of record does not teach the claimed subject matter including applying a power density of about 3 to 5 watts per cm<sup>2</sup> to the composite target and varying the pressure of the reactive species within the sputtering atmosphere to control the sputtering rate of the matrix and inclusion phases of the composite target to cause

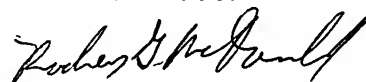
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the ratio of the elements in the two component phases to deposit in a desired ratio as a thin film on the substrate.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rodney G. McDonald whose telephone number is 571-272-1340. The examiner can normally be reached on M- Th with Every other Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam X. Nguyen can be reached on 571-272-1342. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Rodney G. McDonald  
Primary Examiner  
Art Unit 1753

RM  
December 6, 2006